

**Remarks**

No new claims have been added, and Claim 27 has been cancelled. Therefore, Claims 1–26 and 28–37 remain pending in this Application. Claims 1–4, 11, 23 and 31 are independent.

**Interview Summary.**

Applicant thanks the Examiner for conducting a telephonic interview in this Application on 17 May 2005. The following summarizes the substance of the interview, in accordance with the guidelines provided by MPEP 713.04.

- (A) No exhibits were shown, and no demonstration was conducted.
- (B) Claims 6, 11 and 13 were discussed.
- (C) The teachings of U.S. Patent 5,518,008 ("Cucchiaro") and U.S. Patent 6,120,466 ("Earthman") were discussed.
- (D) No claim amendments were discussed.
- (E) Applicant explained why the teachings of the Cucchiaro and Earthman references are not applicable to the currently pending claims.
- (F) No other pertinent matters were discussed.
- (G) Examiner agreed to consider Applicant's arguments in detail upon submission of a formal amendment.

**Claim Rejections Under 35 U.S.C. § 102(b) based on U.S. Patent 6,120,466.**

Claims 1–4, 8, 9, 11, 14–16, 18 and 20–29 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent 6,120,466 ("Earthman"). Claims 1–4, 11 and 23 are independent.

Earthman discloses methods and systems for measuring quantitatively the energy damping capacity of a specimen using a tapping rod (abstract). Earthman discloses that the energy damping capacity is measured by a loss coefficient  $\eta$ , which is provided by the following expression:

$$\eta = \frac{1}{2\pi} \left[ 1 - \frac{E_\epsilon + D_p}{U} \right]$$

(7:55). The elastic strain energy returned to the tapping rod  $E_\epsilon$  is proportional to the square of the force on the tapping rod, and can be calculated using acceleration data collected from an accelerometer coupled to the tapping rod (8:6–15). The kinetic energy of the tapping rod just prior to contact with the specimen  $U$  is a known quantity (7:29–32), and  $D_p$  is a constant that depends on the testing configuration and the tapping rod (8:20–21). Therefore, Earthman discloses methods and systems for calculating energy damping capacity based on a quantitative analysis of the aforementioned parameters.

Claim 1. In contrast to Earthman, Claim 1 recites, among other things,  
creating a time-energy profile based on the energy reflected from the  
honeycomb structure during the time interval; and  
evaluating the time-energy profile to determine the acoustic damping  
capacity of the honeycomb structure.

The Examiner has taken the position that Earthman anticipates Claim 1 because Earthman is said to disclose, among other things, creating a time-energy profile. However, Claim 1 recites additional features which are not taught by Earthman, such as “evaluating the time-energy profile to determine the acoustic damping capacity”. While the methods and apparatuses disclosed in Earthman represented significant advances in the field of structural evaluation, Earthman’s calculation of loss coefficient is based on parameters such as the initial kinetic energy of the system and data collected from the accelerometer as a result of the impact with the specimen. This is significantly different from the evaluation recited in Claim 1. In particular, Earthman certainly does not teach “evaluating the time-energy profile to determine the acoustic damping capacity”, as is recited in Claim 1.

Based on the foregoing, Applicants submit that Claim 1 is allowable over Earthman, and respectfully request that the rejection of Claim 1 be withdrawn.

Claim 2. In contrast to Earthman, Claim 2 recites, among other things,

creating a time-energy profile based on the energy reflected from the implant structure during the time interval; and  
evaluating the time-energy profile to determine the damping capacity of the implant structure.

The Examiner has taken the position that Earthman anticipates Claim 2 because Earthman is said to disclose, among other things, creating a time-energy profile. However, Claim 2 recites additional features which are not taught by Earthman, such as "evaluating the time-energy profile to determine the damping capacity of the implant structure". While the methods and apparatuses disclosed in Earthman represented significant advances in the field of structural evaluation, Earthman's calculation of loss coefficient is based on parameters such as the initial kinetic energy of the system and data collected from the accelerometer as a result of the impact with the specimen. This is significantly different from the evaluation recited in Claim 2. In particular, Earthman certainly does not teach "evaluating the time-energy profile to determine the damping capacity of the implant structure", as is recited in Claim 2.

Based on the foregoing, Applicants submit that Claim 2 is allowable over Earthman, and respectfully request that the rejection of Claim 2 be withdrawn.

*Claim 3.* In contrast to Earthman, Claim 3 recites, among other things,

creating a time-energy profile based on the energy reflected from the tooth during the time interval; and  
evaluating the time-energy profile to determine the damping capacity of the tooth.

The Examiner has taken the position that Earthman anticipates Claim 3 because Earthman is said to disclose, among other things, creating a time-energy profile. However, Claim 3 recites additional features which are not taught by Earthman, such as "evaluating the time-energy profile to determine the damping capacity of the tooth". While the methods and apparatuses disclosed in Earthman represented significant advances in the field of structural evaluation, Earthman's calculation of loss coefficient is based on parameters such as the initial kinetic energy of the system and data collected from the accelerometer as a result of the impact with the specimen. This is significantly different from the evaluation recited in Claim 3. In particular, Earthman

certainly does not teach "evaluating the time-energy profile to determine the damping capacity of the tooth", as is recited in Claim 3.

Based on the foregoing, Applicants submit that Claim 3 is allowable over Earthman, and respectfully request that the rejection of Claim 3 be withdrawn.

Claims 4, 8 and 9. In contrast to Earthman, Claim 4 recites, among other things,  
creating a time-energy profile based on the energy reflected from the  
object during the time interval; and  
evaluating the time-energy profile to determine the damping capacity of  
the object.

The Examiner has taken the position that Earthman anticipates Claim 4 because Earthman is said to disclose, among other things, creating a time-energy profile. However, Claim 4 recites additional features which are not taught by Earthman, such as "evaluating the time-energy profile to determine the damping capacity of the object". While the methods and apparatuses disclosed in Earthman represented significant advances in the field of structural evaluation, Earthman's calculation of loss coefficient is based on parameters such as the initial kinetic energy of the system and data collected from the accelerometer as a result of the impact with the specimen. This is significantly different from the evaluation recited in Claim 4. In particular, Earthman certainly does not teach "evaluating the time-energy profile to determine the damping capacity of the object", as is recited in Claim 4.

Based on the foregoing, Applicants submit that Claim 4 is allowable over Earthman, and respectfully request that the rejection of Claim 4 be withdrawn. Furthermore, because Claims 8 and 9 depend from independent Claim 4, and further distinguish the claimed invention from Earthman, Applicants submit that Claims 8 and 9 are allowable over Earthman for at least the same reasons that Claim 4 is allowable over Earthman. Therefore, Applicants respectfully request that the rejections of Claims 8 and 9 also be withdrawn.

Claims 11, 14-16, 18 and 20-22. In contrast to Earthman, Claim 11 recites, among other things,

creating a time-energy profile of the energy reflected from the object; and

evaluating the time-energy profile to make a determination regarding the structural characteristics of the object.

The Examiner has taken the position that Earthman anticipates Claim 11 because Earthman is said to disclose, among other things, creating a time-energy profile. However, Claim 11 recites additional features which are not taught by Earthman, such as “evaluating the time-energy profile to make a determination regarding the structural characteristics of the object”. While the methods and apparatuses disclosed in Earthman represented significant advances in the field of structural evaluation, Earthman’s calculation of loss coefficient is based on parameters such as the initial kinetic energy of the system and data collected from the accelerometer as a result of the impact with the specimen. This is significantly different from the evaluation recited in Claim 11. In particular, Earthman certainly does not teach “evaluating the time-energy profile to make a determination regarding the structural characteristics of the object”, as is recited in Claim 11.

Based on the foregoing, Applicants submit that Claim 11 is allowable over Earthman, and respectfully request that the rejection of Claim 11 be withdrawn. Furthermore, because Claims 14–16, 18 and 20–22 depend from independent Claim 11, and further distinguish the claimed invention from Earthman, Applicants submit that Claims 14–16, 18 and 20–22 are allowable over Earthman for at least the same reasons that Claim 11 is allowable over Earthman. Therefore, Applicants respectfully request that the rejections of Claims 14–16, 18 and 20–22 also be withdrawn.

Claims 23–29. In contrast to Earthman, amended Claim 23 recites, among other things,

a data analyzer programmed to evaluate a shape of a reflected energy pulse detected by the accelerometer; and  
a computer coupled to the accelerometer, the computer configured to generate and display a time-energy profile of the reflected energy as detected by the accelerometer.

Earthman discloses a method of determining the loss coefficient  $\eta$  of a specimen according to the calculations set forth above. Earthman’s calculation is based on parameters such as the initial kinetic energy of the system and data collected from the

accelerometer as a result of the impact with the specimen. A system configured to make such an evaluation is significantly different from a system programmed to "evaluate a shape of a reflected energy pulse detected by the accelerometer", as is recited in amended Claim 23.

Based on the foregoing, Applicants submit that Claim 23 is allowable over Earthman, and respectfully request that the rejection of Claim 23 be withdrawn. Furthermore, because Claims 24–29 depend from independent Claim 23, and further distinguish the claimed invention from Earthman, Applicants submit that Claims 24–29 are allowable over Earthman for at least the same reasons that Claim 23 is allowable over Earthman. Therefore, Applicants respectfully request that the rejections of Claims 24–29 also be withdrawn.

**Claim Rejections Under 35 U.S.C. § 102(b) based on U.S. Patent 5,518,008.**

Claims 4–6, 11, 13, 17 and 31–36 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent 5,518,008 ("Cucchiaro"). Claims 4, 11 and 31 are independent.

Cucchiaro discloses a system for analyzing dental implants (abstract). A hammer is impacted against the dental implant, thereby causing the implant to vibrate (4:37–40). An accelerometer is used to record the acceleration time history of the vibrating implant (4:55–57). The acceleration time history is into a frequency spectrum recorded in volts as a function of frequency (5:41–48), and example of which is provided in Figure 7 of the Cucchiaro reference. The resonant frequencies of the implant are indicated by peaks in the frequency spectrum (6:63–64).

Claims 4–6. In contrast to Cucchiaro, Claim 4 recites, among other things,  
                    creating a time-energy profile based on the energy reflected from the  
                    object during the time interval; and  
                    evaluating the time-energy profile to determine the damping capacity of  
                    the object.

As discussed during the telephonic interview, Cucchiaro cannot anticipate the combination of elements recited in Claim 4. In particular, Cucchiaro discloses analyzing

the frequency spectrum, recorded in volts as a function of frequency, produced as a result of tapping on a dental implant. The analysis disclosed in Cucchiaro does not involve "creating a time-energy profile based on the energy reflected from the object", and therefore cannot include "evaluating the time-energy profile to determine the damping capacity of the object".

Based on the foregoing, Applicants submit that Claim 4 is allowable over Cucchiaro, and respectfully request that the rejection of Claim 4 be withdrawn. Furthermore, because Claims 5 and 6 depend from independent Claim 4, and further distinguish the claimed invention from Cucchiaro, Applicants submit that Claims 5 and 6 are allowable over Cucchiaro for at least the same reasons that Claim 4 is allowable over Cucchiaro. Therefore, Applicants respectfully request that the rejections of Claims 5 and 6 also be withdrawn.

Claims 11, 13 and 17. In contrast to Cucchiaro, Claim 11 recites, among other things,

creating a time-energy profile of the energy reflected from the object; and  
evaluating the time-energy profile to make a determination regarding the  
structural characteristics of the object.

As discussed during the telephonic interview, Cucchiaro cannot anticipate the combination of elements recited in Claim 11. In particular, Cucchiaro discloses analyzing the frequency spectrum, recorded in volts as a function of frequency, produced as a result of tapping on a dental implant. The analysis disclosed in Cucchiaro does not involve "creating a time-energy profile of the energy reflected from the object", and therefore cannot include "evaluating the time-energy profile to make a determination regarding the structural characteristics of the object".

Based on the foregoing, Applicants submit that Claim 11 is allowable over Cucchiaro, and respectfully request that the rejection of Claim 11 be withdrawn. Furthermore, because Claims 13 and 17 depend from independent Claim 11, and further distinguish the claimed invention from Cucchiaro, Applicants submit that Claims 13 and 17 are allowable over Cucchiaro for at least the same reasons that Claim 11 is

allowable over Cucchiaro. Therefore, Applicants respectfully request that the rejections of Claims 13 and 17 also be withdrawn.

Claims 31–36. In contrast to Cucchiaro, amended Claim 31 recites, among other things,

creating a time-energy profile of the energy reflected from the structure;  
and  
evaluating the time-energy profile to make a determination regarding the stability of the structure in the foundation.

As discussed during the telephonic interview, Cucchiaro cannot anticipate the combination of elements recited in amended Claim 31. In particular, Cucchiaro discloses analyzing the frequency spectrum, recorded in volts as a function of frequency, produced as a result of tapping on a dental implant. The analysis disclosed in Cucchiaro does not involve “creating a time-energy profile of the energy reflected from the structure”, and therefore cannot include “evaluating the time-energy profile to make a determination regarding the stability of the structure”.

Based on the foregoing, Applicants submit that Claim 31 is allowable over Cucchiaro, and respectfully request that the rejection of Claim 31 be withdrawn. Furthermore, because Claims 32–36 depend from independent Claim 31, and further distinguish the claimed invention from Cucchiaro, Applicants submit that Claims 32–36 are allowable over Cucchiaro for at least the same reasons that Claim 31 is allowable over Cucchiaro. Therefore, Applicants respectfully request that the rejections of Claims 32–36 also be withdrawn.

**Claim Rejections Under 35 U.S.C. § 103(a).**

Claims 10, 12 and 30 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Earthman.

- Claim 10 depends from independent Claim 4, and further distinguishes the claimed invention from Earthman. Therefore, Applicants submit that Claim 10 is allowable over Earthman for at least the same reasons that Claim 4 is



allowable over Earthman. Therefore, Applicants respectfully request that the rejection of Claim 10 be withdrawn.

- Claim 12 depends from independent Claim 11, and further distinguishes the claimed invention from Earthman. Therefore, Applicants submit that Claim 12 is allowable over Earthman for at least the same reasons that Claim 11 is allowable over Earthman. Therefore, Applicants respectfully request that the rejection of Claim 12 be withdrawn.
- Claim 30 depends from amended independent Claim 23, and further distinguishes the claimed invention from Earthman. Therefore, Applicants submit that Claim 30 is allowable over Earthman for at least the same reasons that amended Claim 23 is allowable over Earthman. Therefore, Applicants respectfully request that the rejection of Claim 30 be withdrawn.

Claims 7 and 19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Earthman in view of U.S. Patent 5,144,753 ("Murphy").

- Claim 7 depends from independent Claim 4, and further distinguishes the claimed invention from Earthman. Murphy does not remedy the deficiencies of Earthman. Therefore, Applicants submit that Claim 7 is allowable over the cited references for at least the same reasons that Claim 4 is allowable over the cited references. Therefore, Applicants respectfully request that the rejection of Claim 7 be withdrawn.
- Claim 19 depends from independent Claim 11, and further distinguishes the claimed invention from Earthman. Murphy does not remedy the deficiencies of Earthman. Therefore, Applicants submit that Claim 19 is allowable over the cited references for at least the same reasons that Claim 11 is allowable over the cited references. Therefore, Applicants respectfully request that the rejection of Claim 19 be withdrawn.

Claim 37 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Cucchiaro in view of the Barzin reference. Claim 37 depends from amended

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independent Claim 31, and further distinguishes the claimed invention from Cucchiaro. The Barzin reference does not remedy the deficiencies of Cucchiaro. Therefore, Applicants submit that Claim 37 is allowable over the cited references for at least the same reasons that amended Claim 31 is allowable over the cited references. Therefore, Applicants respectfully request that the rejection of Claim 37 be withdrawn.

**Conclusion.**

In view of the foregoing amendments, the Applicants submit that this application is in condition for allowance, and respectfully request the same. If, however, some issue remains that the Examiner feels can be addressed by an Examiner's Amendment, the Examiner is cordially invited to call the undersigned for authorization.

Respectfully submitted,

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